Ten years of WFD implementation in Europe: a critical review based on the experience "made in Germany"

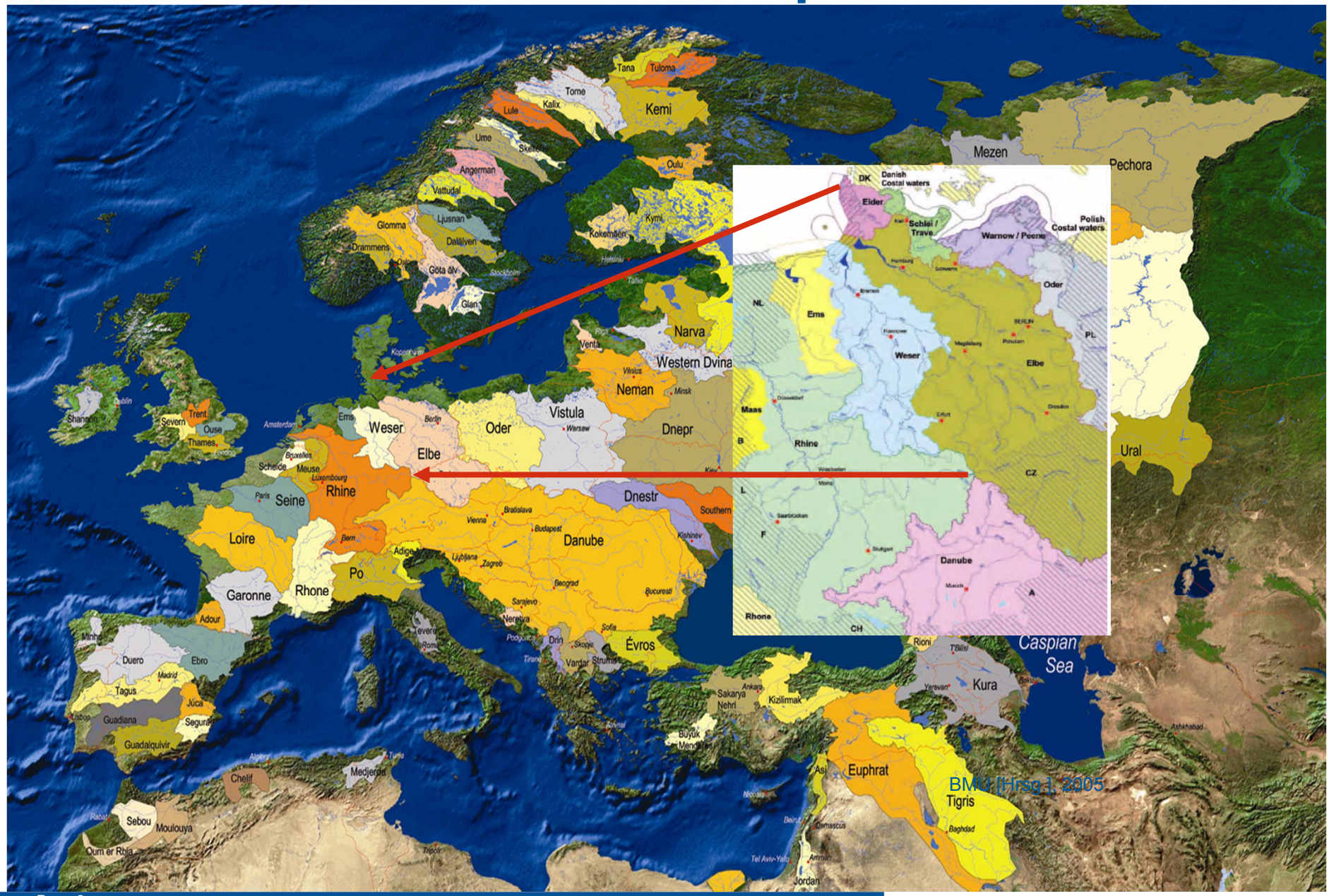
Dietrich Borchardt, Ilona Bärlund and Sandra Richter

Technische Universität Dresden, Department of Hydrosciences,

Helmholtz Centre for Environmental Research – UFZ,
Head of Department of Aquatic Ecosystems Analysis and Management

HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ

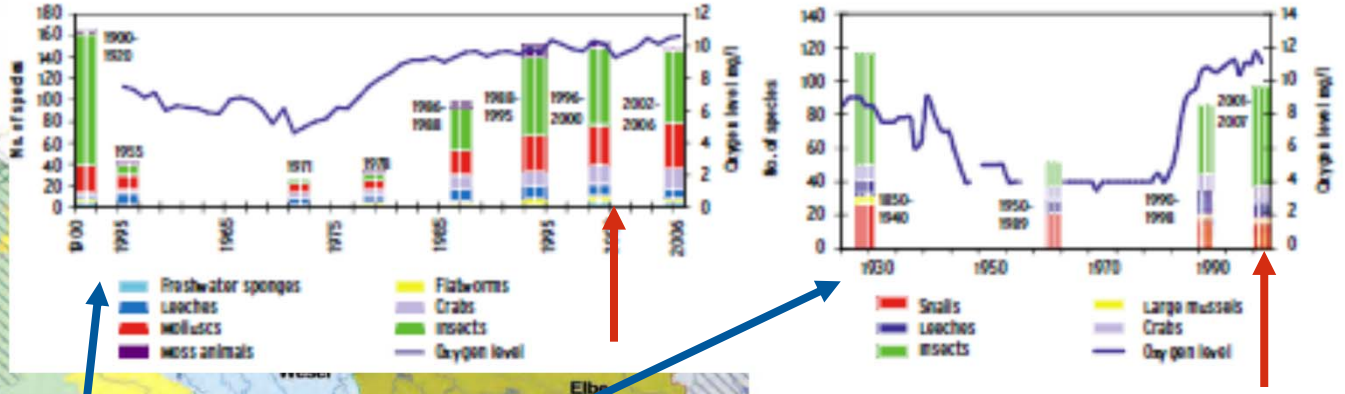
The river catchments in Europe and D…



BMU [Hrsg.], 2005

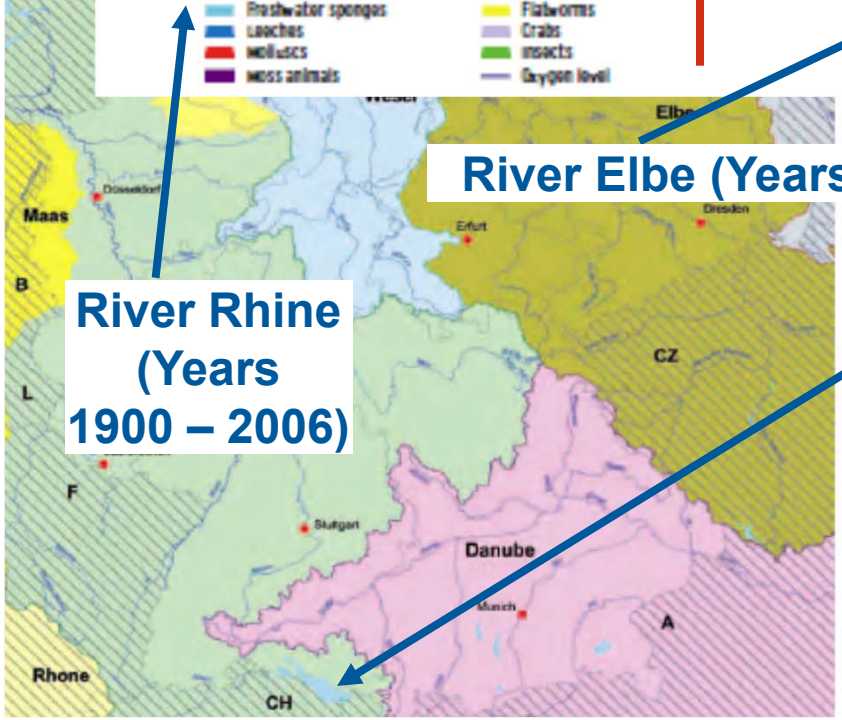
Milestones of river and lake sanitation in D

Oxygen (line) and macroinvertebrate biodiversity (bars)



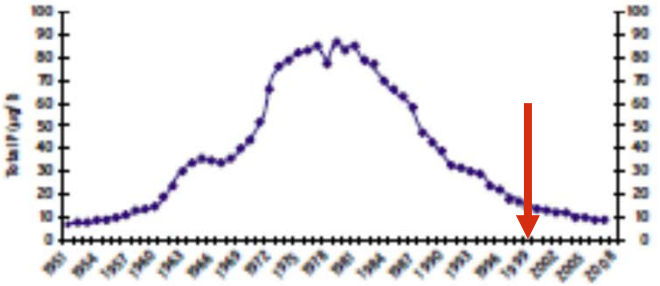
River Elbe (Years 1930 – 2000)

Red arrows:
Implementation of WFD

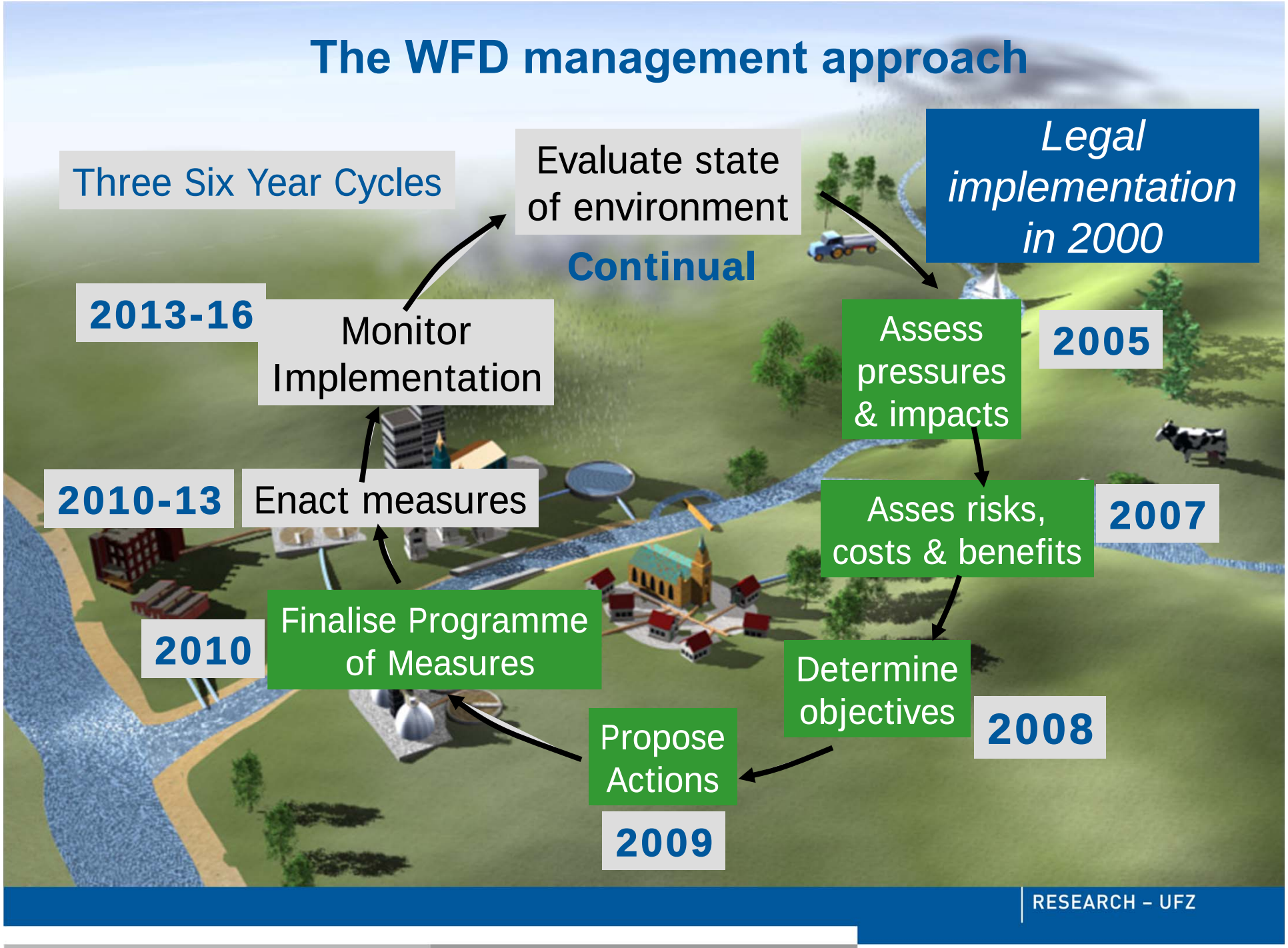


River Rhine
(Years
1900 – 2006)

P in Lake Constance
(Years 1951 – 2008)



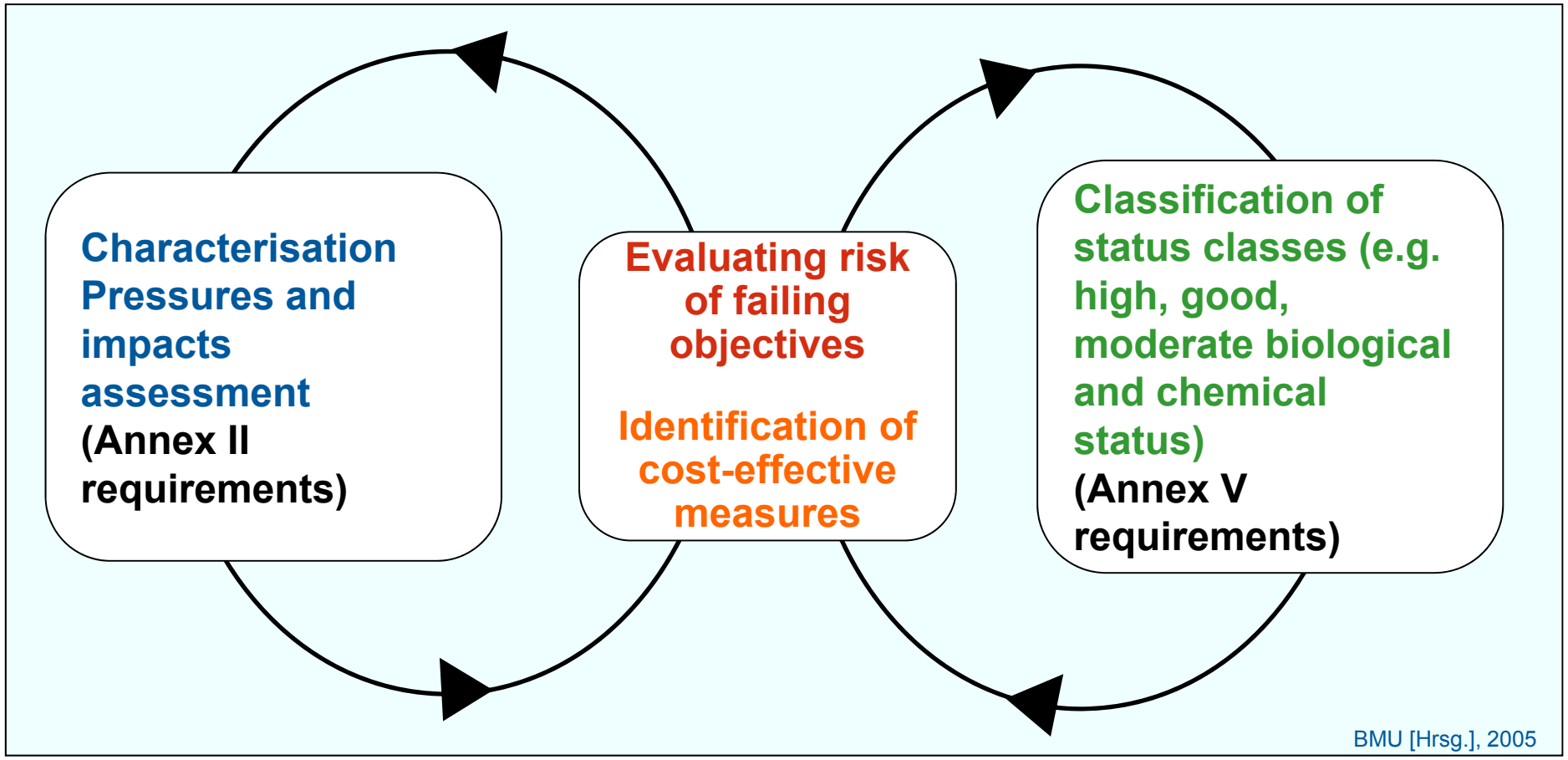
HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ


The WFD management approach
Three Six Year Cycles
Evaluate state of environment
Continual
Legal implementation in 2000
2013-16
Monitor Implementation
Assess pressures & impacts
2005
2010-13
Enact measures
Asses risks, costs & benefits
2007
2010
Finalise Programme of Measures
Determine objectives
2008
Propose Actions
2009
RESEARCH – UFZ

Core issues and WFD-objectives

- Achievement of a "good status" (quantitative, qualitative and/or ecological) for all surface and groundwater bodies
- Programs of measures ranked under the conditions of
  - Ecological efficiency
  - Full cost recovery
  - Public participation
- Tight and legally binding schedule (achievement of objectives by 2015 and latest 2027)
- Details and institutional settings left to member states

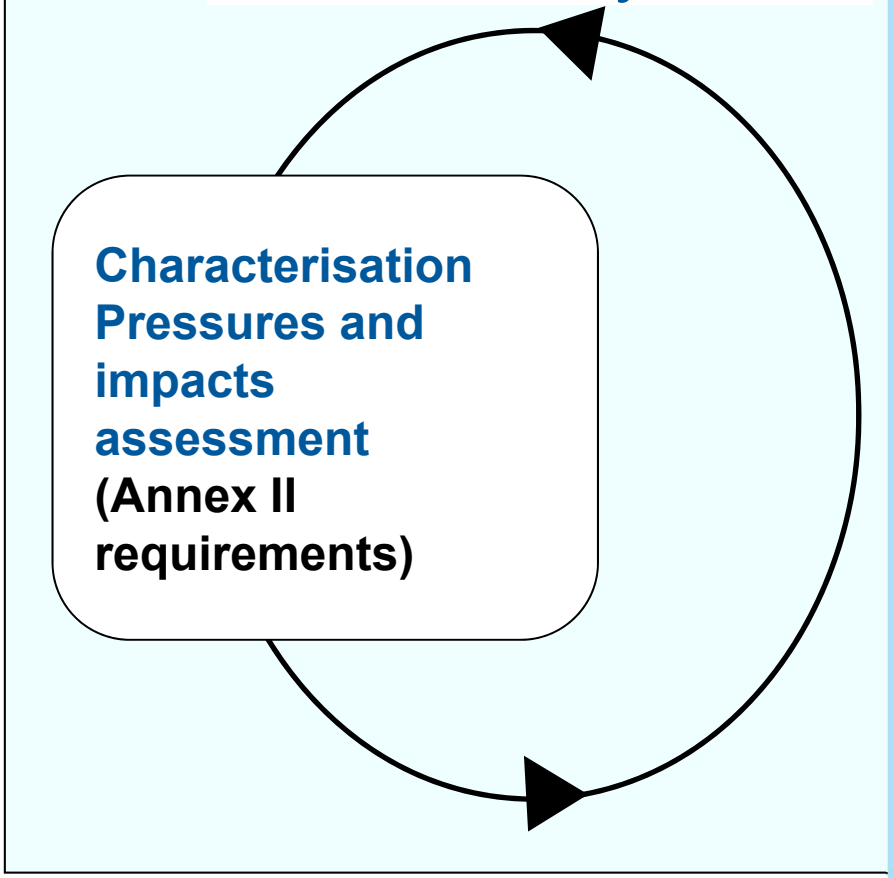
Risk analysis, classification approach and identification of measures under the EU-WFD…

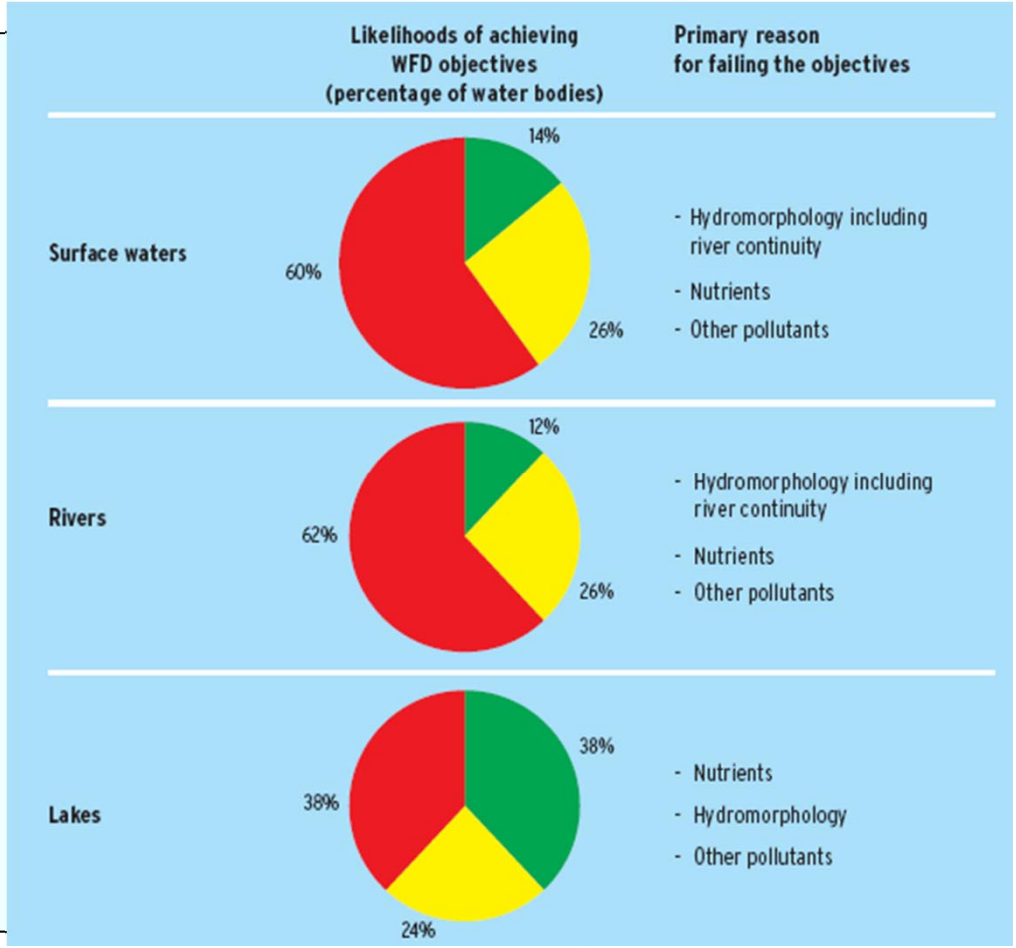


HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Risk analysis approach under the EU-WFD…

Took us five years…

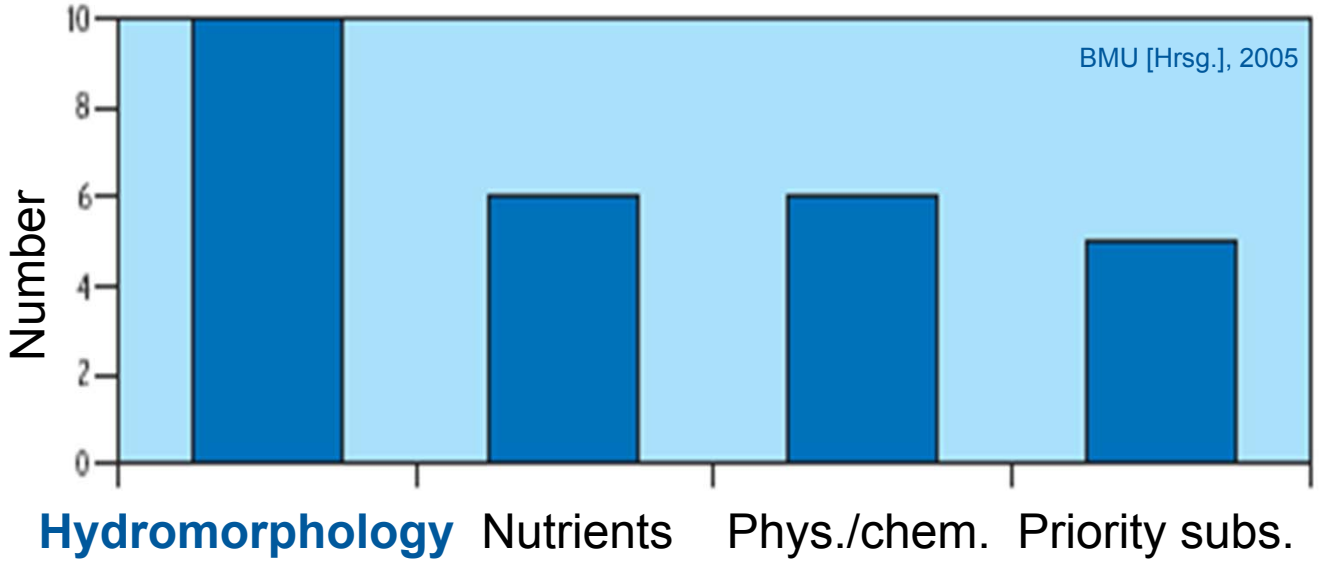




BMU [Hrsg.], 2005

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Reasons for potentially failing WFD objectives

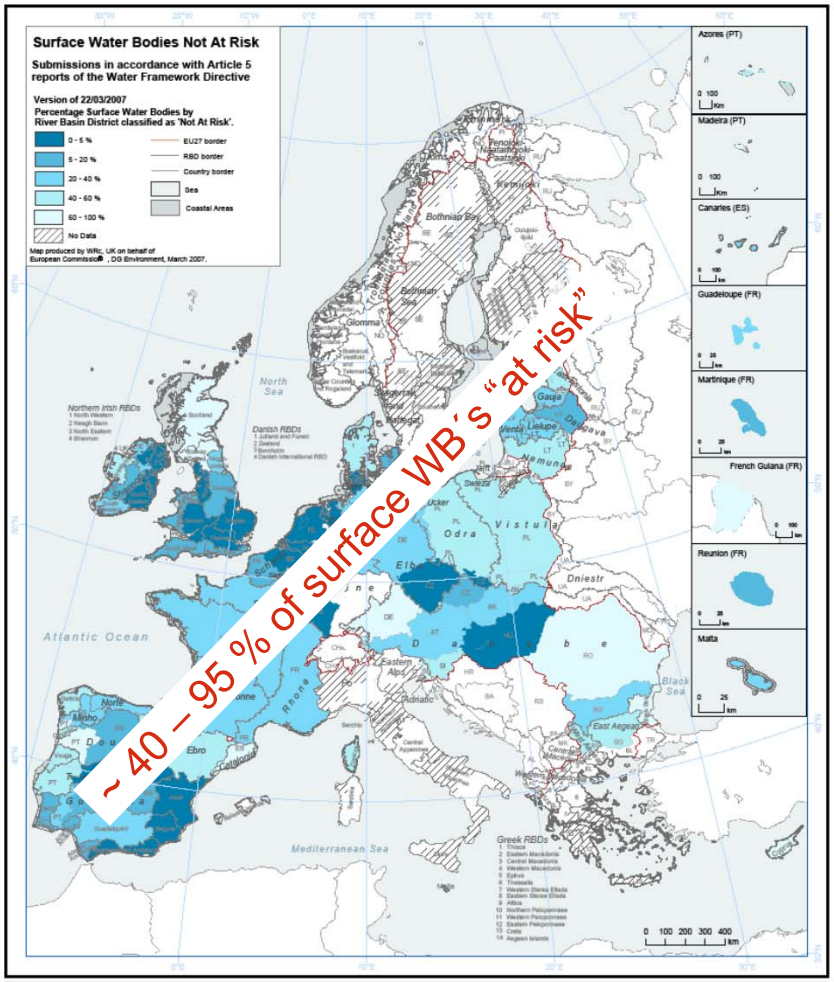


Data basis: 10 River Basin Reports for Germany

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Status of water bodies in Europe

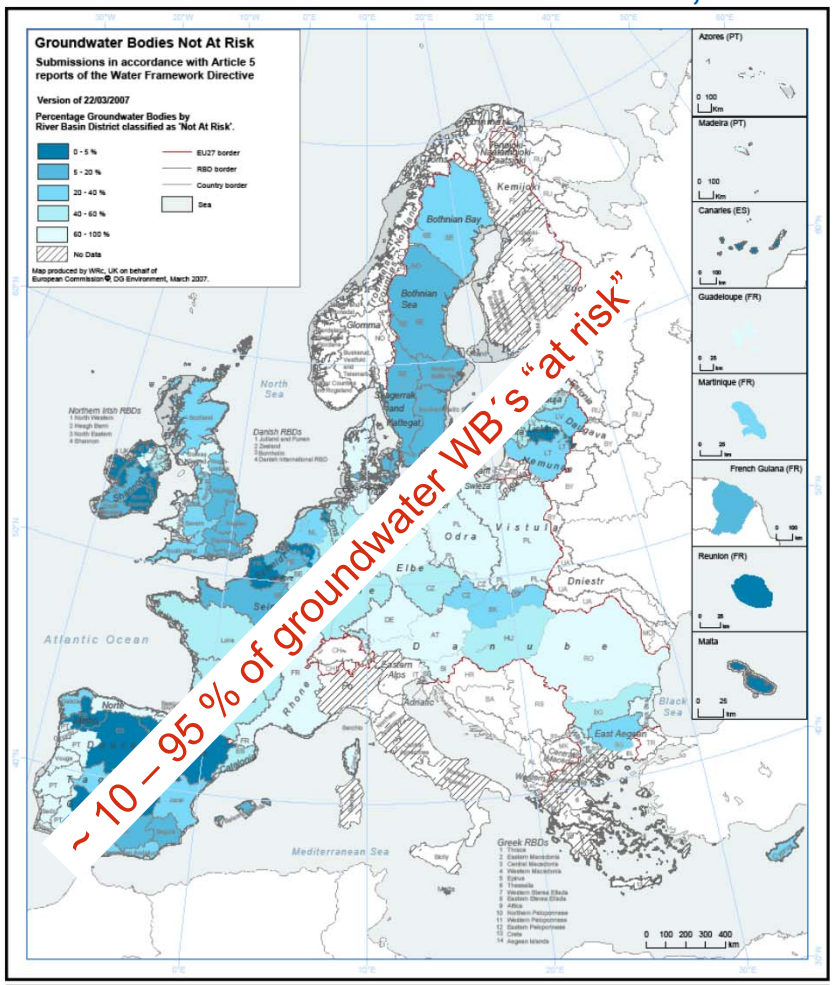
EEA, 2008



Notes:

1) The risk assessment for many water bodies in most Member States has not been conclusive due to lack of data. Percentages of water bodies not assessed due to insufficient data range from 0 to 68 % with an average of 32% for the 23 countries providing data.
2) Germany: No risk assessment results provided for the Rhine RBD.
3) Finland, Greece and Italy: No risk assessment results provided.
4) Poland: Data only submitted for the Odra and Vistula RBDs.
5) Sweden: No data shown as risk assessment carried out at regional rather than water body level.

Surface Water Bodies Not At Risk



Notes:

1) The risk assessment for many water bodies in most Member States has not been conclusive due to lack of data. Percentages of water bodies not assessed due to insufficient data range from 0 to 80 % with an average of 26% for the 24 countries providing data.
2) Finland, Greece and Italy: No risk assessment results provided.
3) Poland: Data only submitted for the Odra and Vistula RBDs.

Groundwater Bodies Not At Risk

Monitoring (starting in 2005)

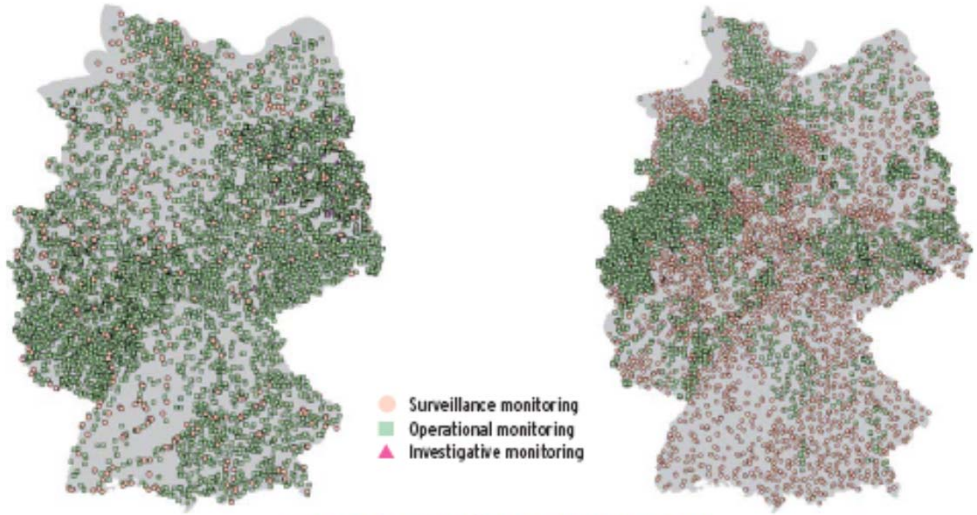
Table 1: Monitoring site counts for the various monitoring types and surface water categories in Germany.
Source: Portal WasserBLIcK/BfG; last updated 22 March 2010.

Monitoring type	Rivers	Lakes	Transitional waters	Coastal waters
Surveillance	290	67	5	32
Operational	7,252	449	20	100
Investigative	375	0	0	0

BMU [Hrsg.], 2010

Map 1: Surveillance, operational and investigative monitoring sites in Germany's surface waters.

Map 2: Surveillance and operational monitoring sites in Germany's groundwaters.



Source: Portal WasserBLIcK/BfG; last updated 22 March 2010.

According to the Water Framework Directive, the ecological status of surface waters is to be assessed in accordance with the following quality elements:

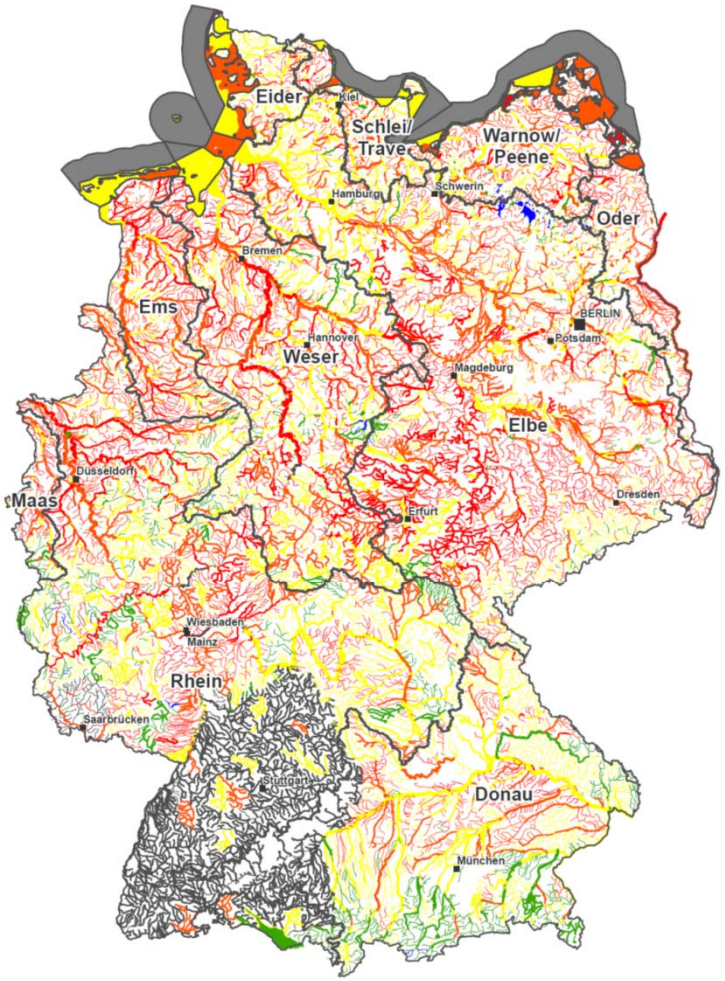
- Biological quality elements (fish, benthic invertebrates, aquatic flora)

in conjunction with the following elements that support the biological elements:

- Chemical quality elements (river basin specific pollutants) and physicochemical quality elements such as thermal, oxygenation and nutrient conditions
- Hydromorphological quality elements such as hydrological regime, morphological conditions or tidal regime

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Ecological status of Running Waters



BMU [Hrsg.], 2010

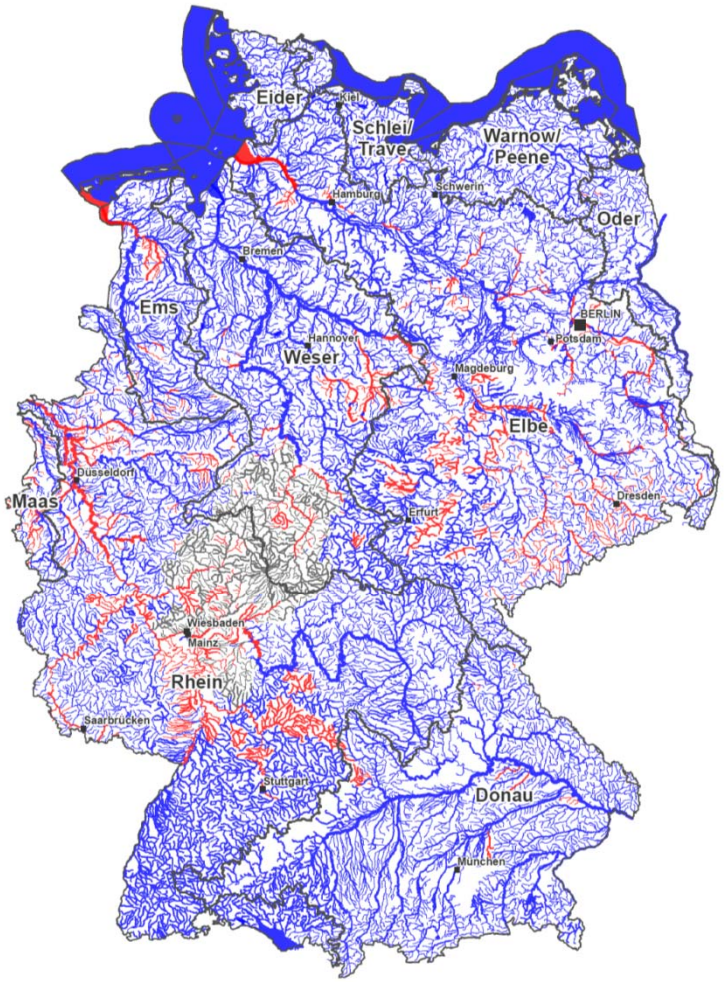
Quelle: Berichtsportal WasserBLIcK/BfG, Stand 22.01.2010

Ecological Status 2010

- ca. 10 % : „very good“ or „good“ status / potential
- Rest „moderate“ to „bad“
- Small amounts not assessed
- Main reasons for failures in running waters: alteration hydromorphology, connectivity and nutrient loads
- Main reasons for failures in lakes, transition and coastal waters: nutrient loads
- Specific contaminants only in single cases

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Chemical status running waters in D



Landeshauptstadt
Bundeshauptstadt
Flussgebietseinheit

Flüsse
gut
nicht gut
unklar

Seen, Übergangsgewässer, Küstengewässer
gut
nicht gut
unklar

BMU [Hrsg.], 2010

Chemical status 2010

- Ca. 90% of all surface waters with a „good chemical status „
- Exceedance of environmental standards:
  Polycyclic aromatic hydrocarbons, Tributylzinn-compounds and Cadmium and Mercury
- Some substances uncertain

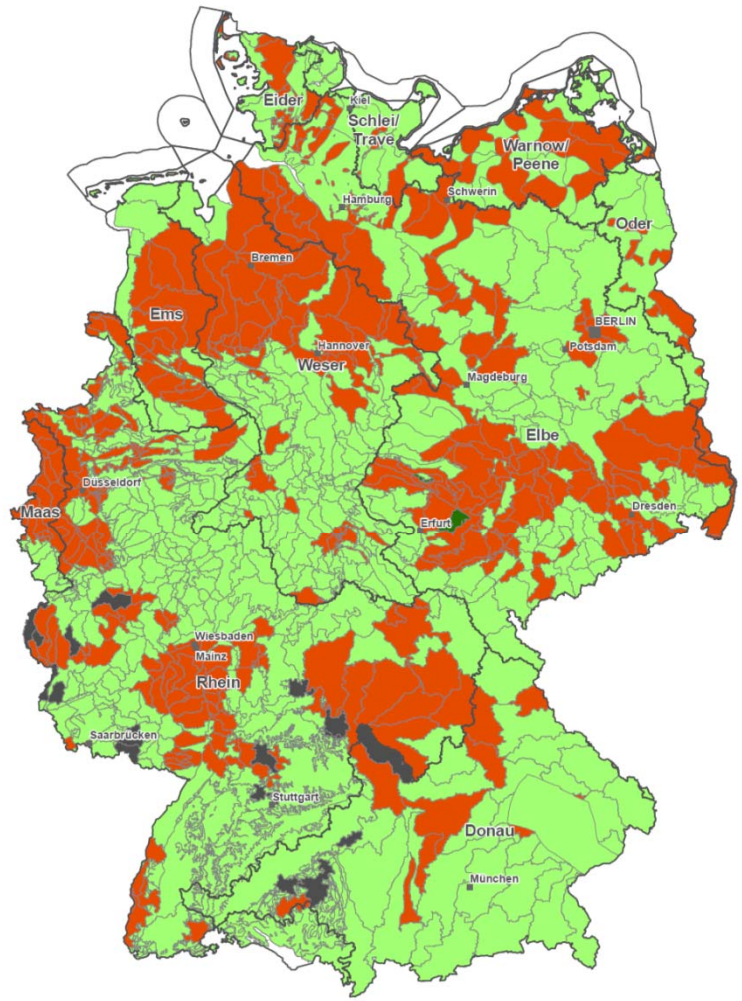
Source: WasserBLIcK/BfG; Stand 22.01.2010

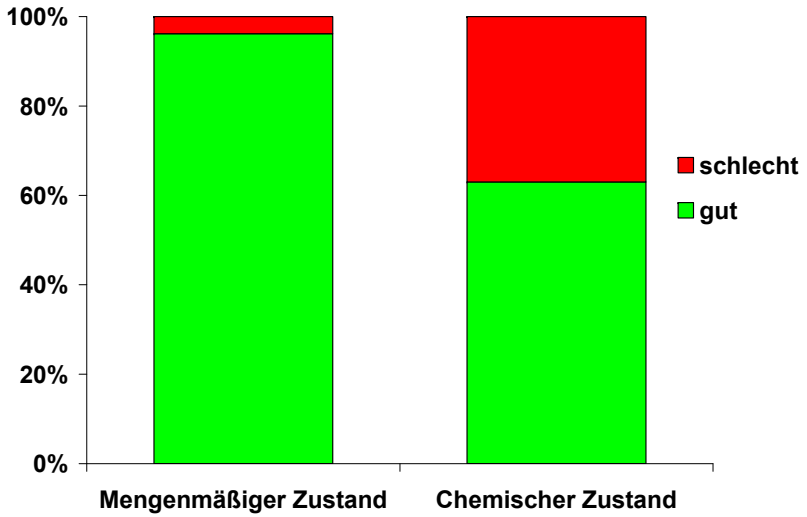
HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Quelle: Berichtsportal WasserBLIcK/BfG, Stand 22.01.2010

Status of groundwater bodies in D

Zielerreichung heute, 2015 und Ausnahmen für Grundwasserkörper in Deutschland





Status groundwater 2010

- Ca. 95% of GWB´s achieve „good quantitative status“
- Ca. 60% of GWB´s achieve „good chemical status“

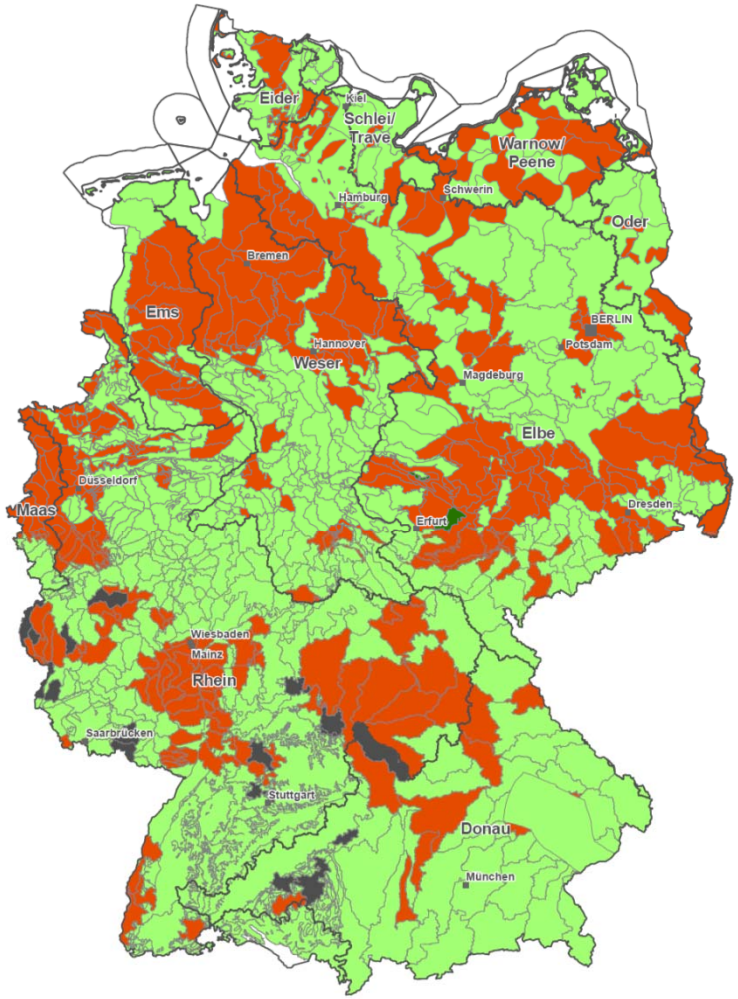
BMU [Hrsg.], 2010 Stand: Januar 2010

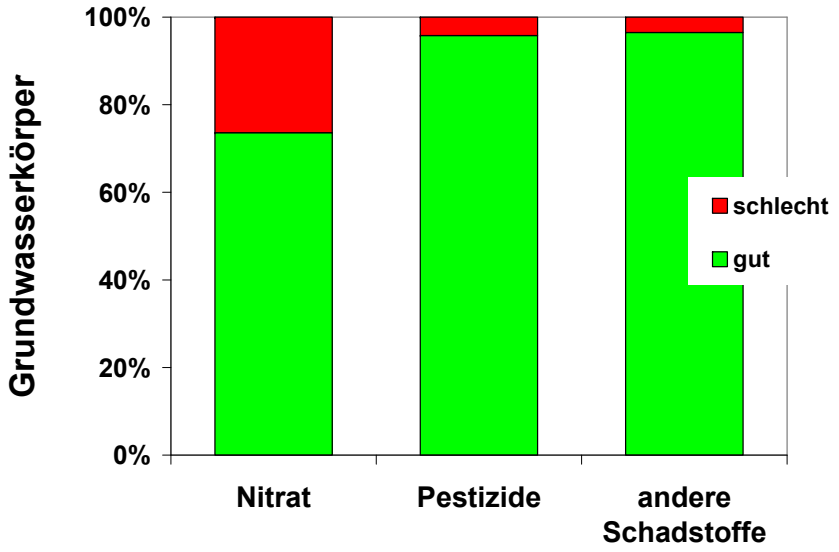
Datenquelle: Berichtsportal WasserBLIcK/BfG; Stand 22.01.2010

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Status of groundwater bodies in D

Zielerreichung heute, 2015 und Ausnahmen für Grundwasserkörper in Deutschland





Status groundwater 2010

- increasing trend of contaminants in 41 GWB´s; in 750 GWB´s no trend detected – or no assessment up to now

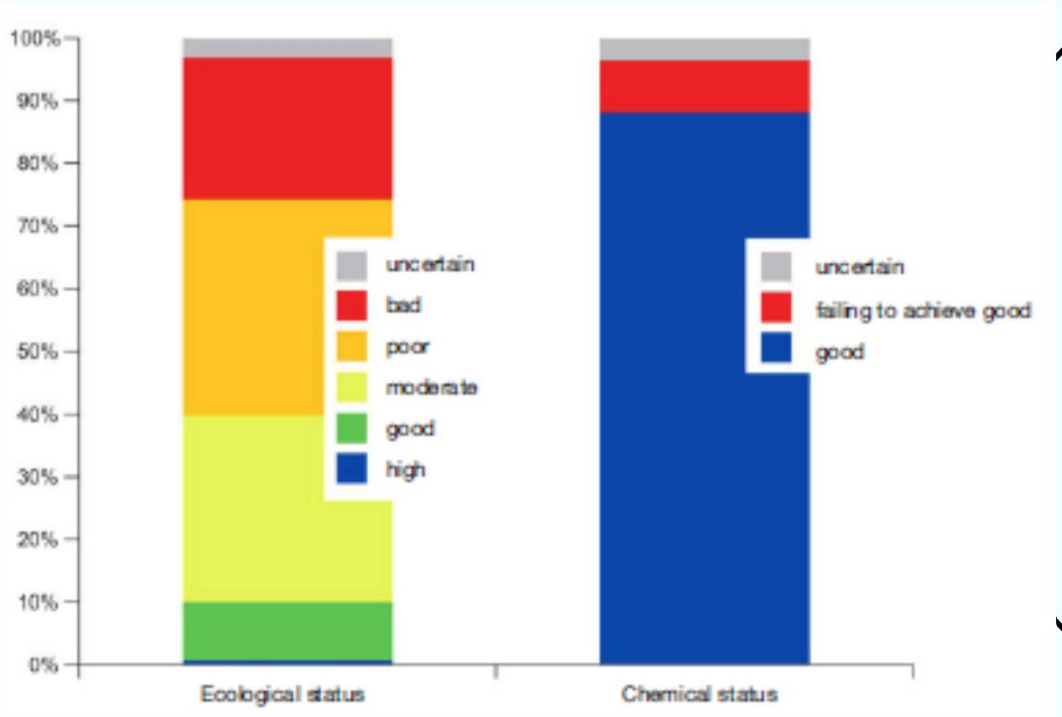
BMU [Hrsg.], 2010 Stand: Januar 2010

Datenquelle: Berichtsportal WasserBLIcK/BfG; Stand 22.01.2010

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Monitoring approach and identification of measures under the EU-WFD…

Took us another five years…

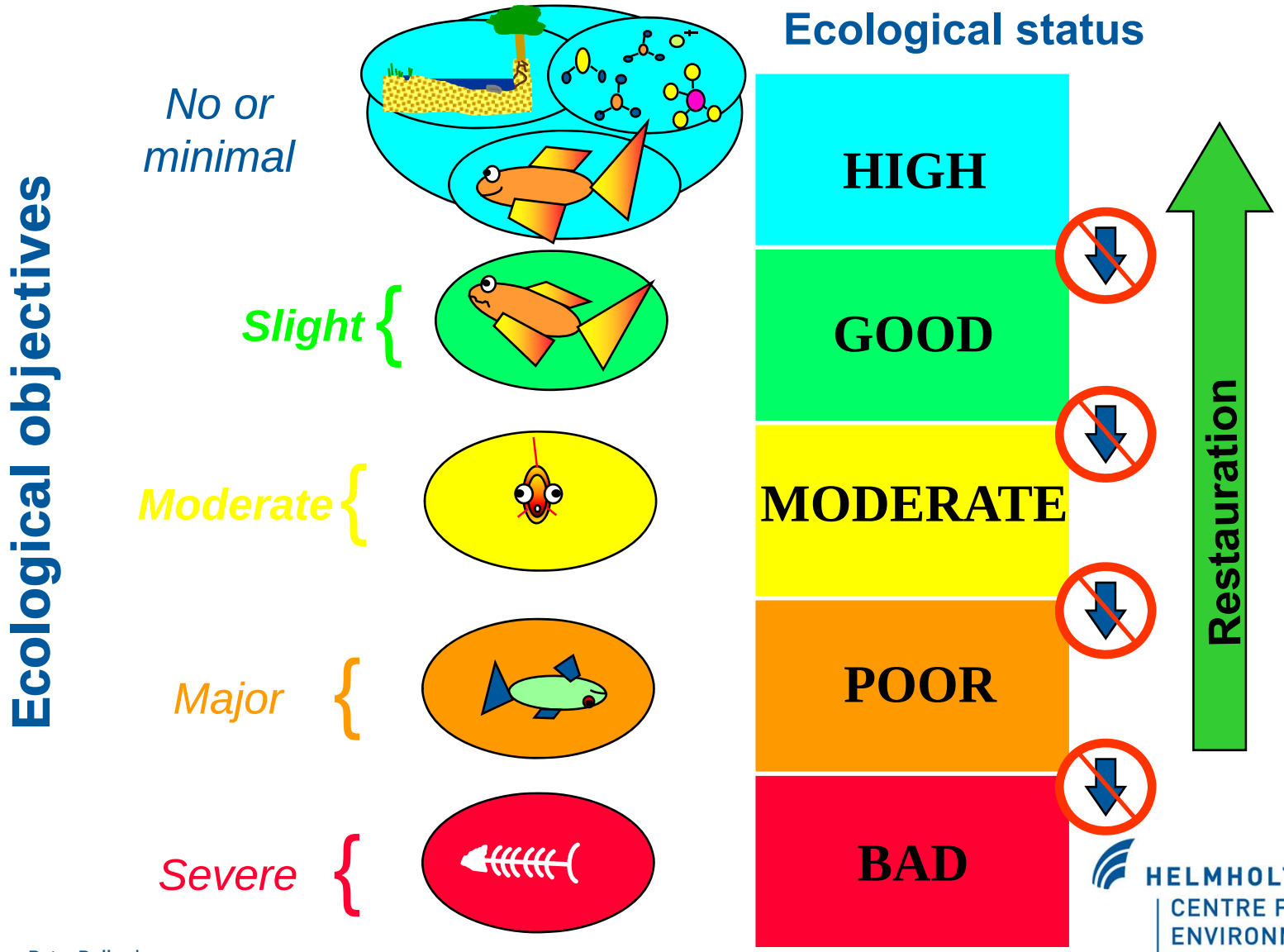


Classification of status classes (e.g. high, good, moderate biological and chemical status)
(Annex V requirements)

BMU [Hrsg.], 2005

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

The „good status“ and the „consequences“…



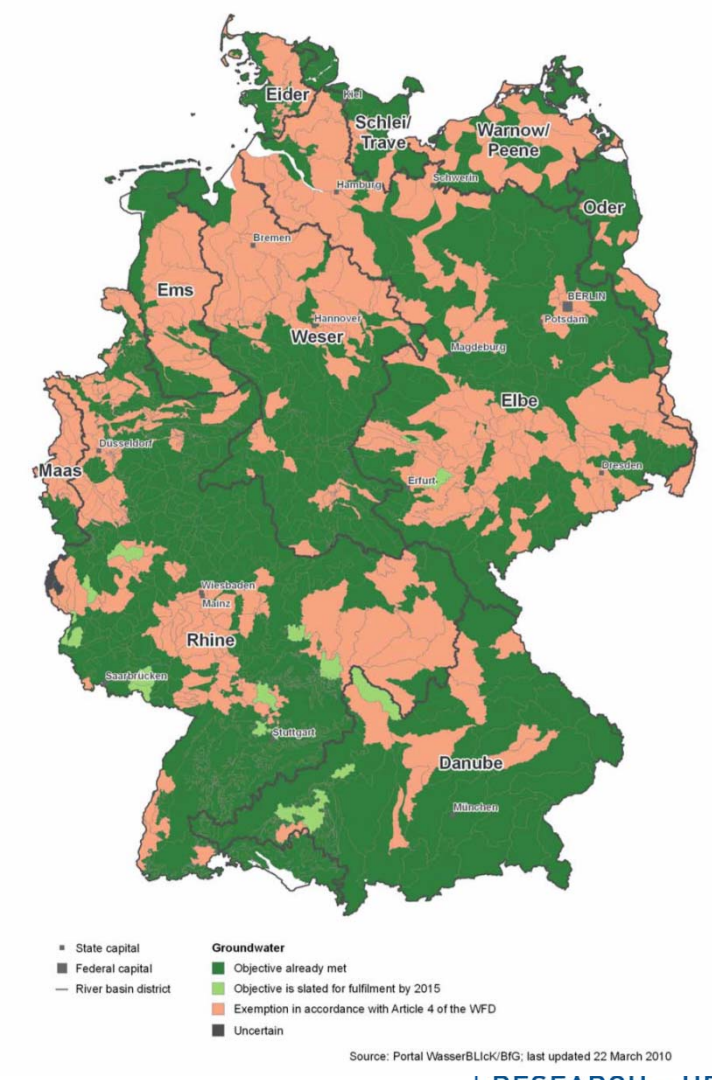
Courtesy: Peter Pollard

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

WFD Environmental objectives and exemptions

Surface waters

Groundwater

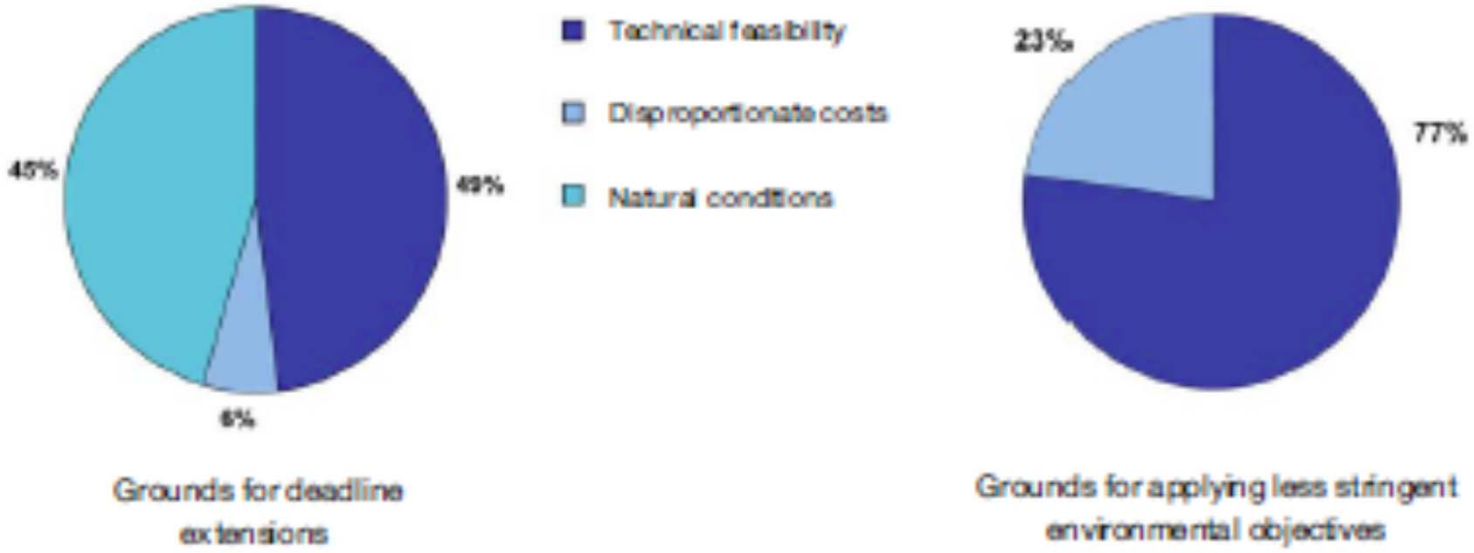


Source: Portal WasserBLIcK/BfG; last updated 22 March 2010

RESEARCH – UFZ

Grounds for exemptions of environmental objectives

Source: Portal WasserBLICK/BfG; last updated 22 March 2010.

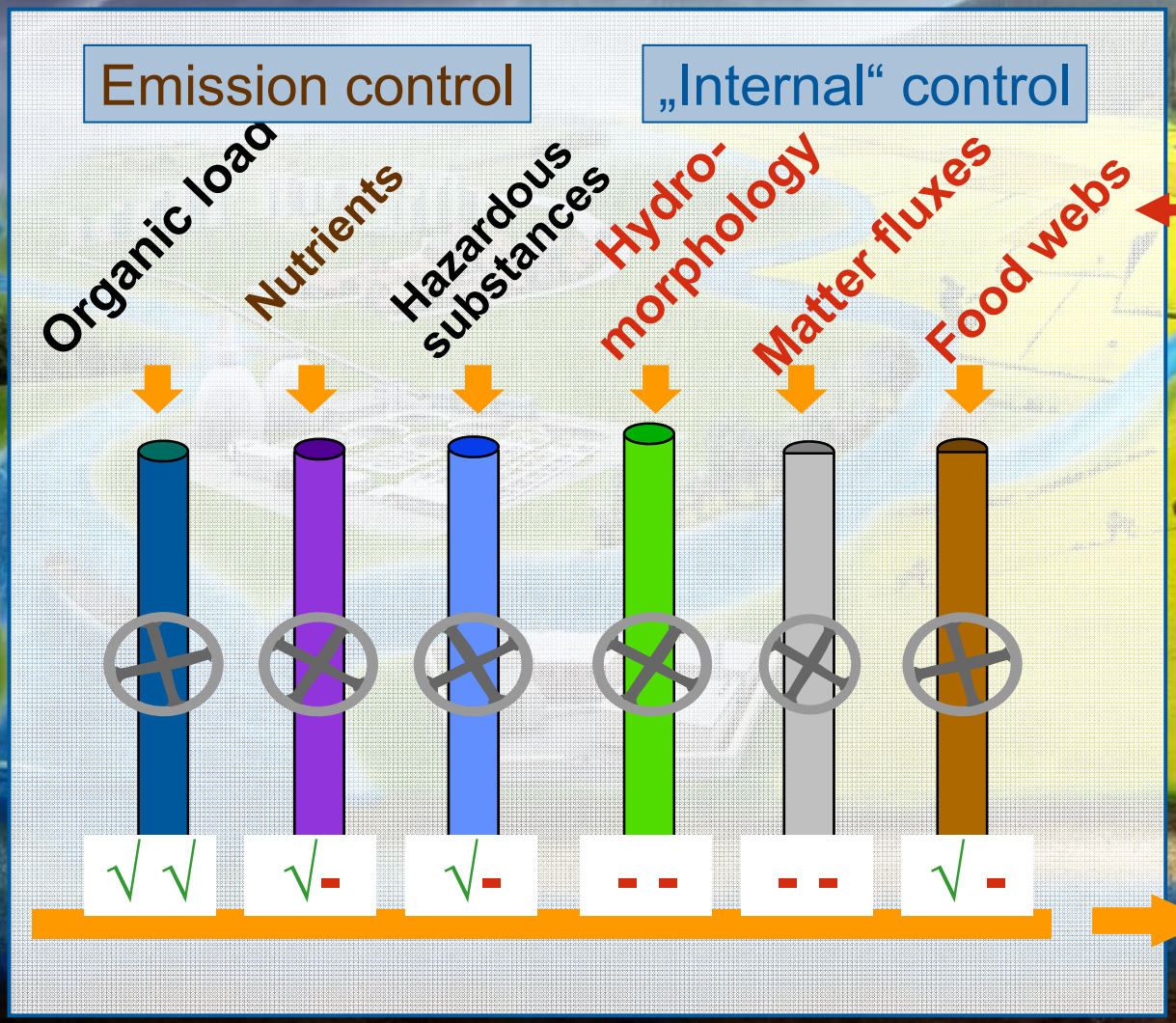


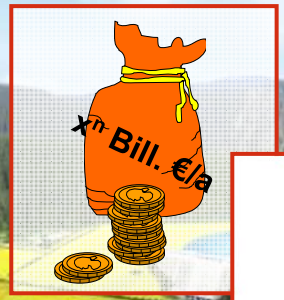
Grounds for deadline extensions

Grounds for applying less stringent environmental objectives

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

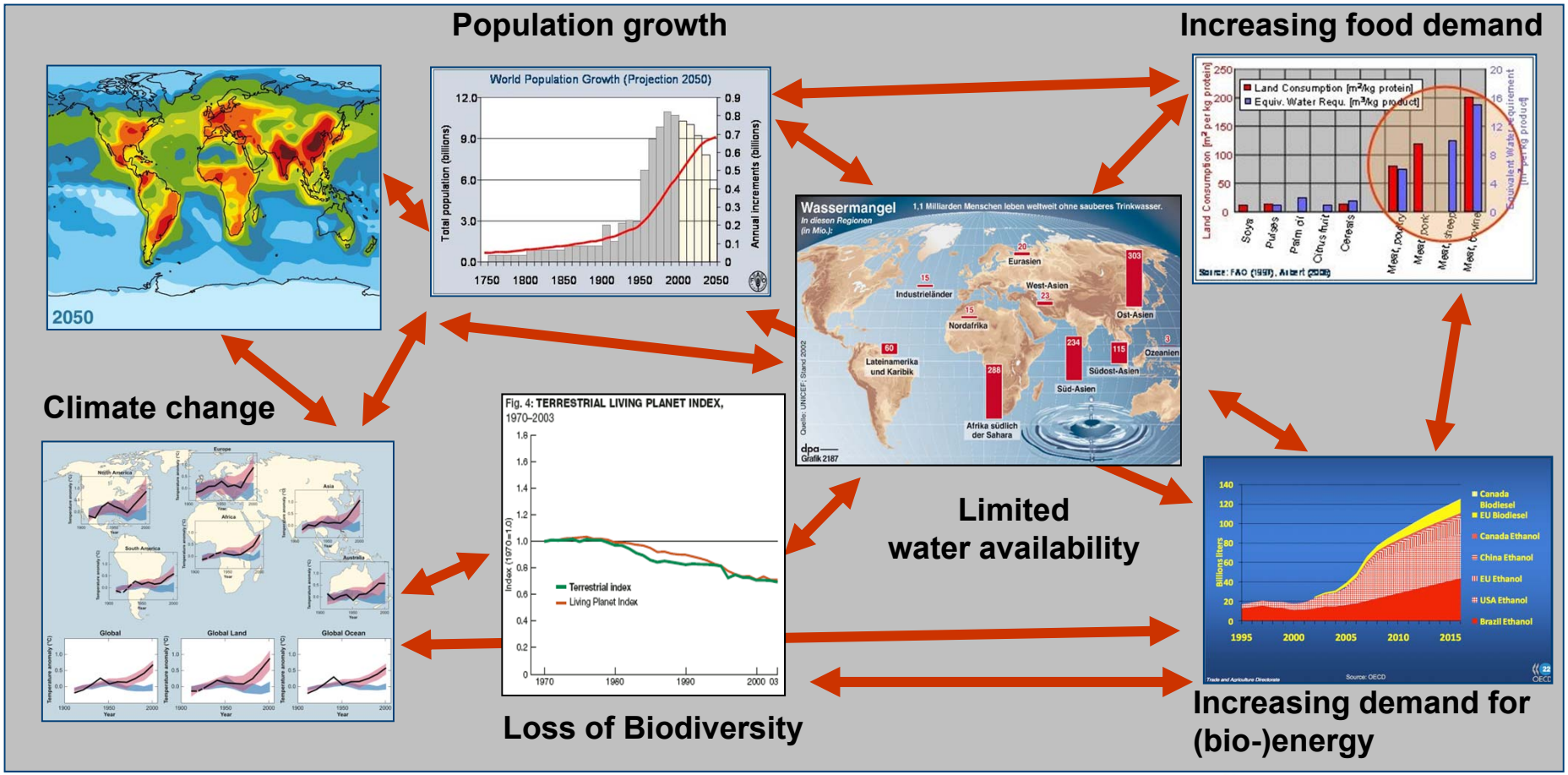
“Steering wheels” and the polluter pays principle…





„Good status“ (quantitative, qualitative, ecological) of surface and gorundwaters

Do we really have so much time for planning ?



→ or do we have to speed up ??

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Conclusions

1. PPP should also be applied to those users who share major responsibility for the ecological deficits and the loss of ecological functions today.

2. Solve the lack of available land for nature and water protection. River corridors that are sufficiently wide would create more habitats and at the same time reduce agro-chemical loads but due to bioenergy demands land use pressure is set to even increase in the near future.

3. A more effective water protection must be embodied consistently in agro-environmental measures. It must be decided where non-binding measures are insufficient and therefore where restrictions of use should apply - with or without compensation.

4. At present climate change impacts and accompanying adaptation strategies are given little consideration in management plans. However, actual or anticipated influence of climate change should not be used as a reason for not having implemented necessary water protection strategies in the future.

<=>

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ

Ten years of WFD impelementation…

?

<=>

HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ